CLAIMS

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1-25. (Canceled)

26. (Previously presented) An apparatus for applying compensation to samples received from an optical channel comprising:

an equalizer having an equalizer response spectrally shaping the samples for compensation to generate a sequence of equalized samples;

an error generator generating an error for a current sample based on the difference between 1) an equalized current sample and 2) a decision for the current sample adjusted for a target response, wherein the target response is based on a response of the optical channel;

a combiner configured to combine the error with one or more samples to provide an update signal, wherein the equalizer employs the update signal to adjust the equalizer response to the target response;

a maximum likelihood sequence estimation (MLSE) detector, the MLSE detector generating decoded data from the sequence of equalized samples, wherein the MLSE detector generates decoded data with an algorithm having transitions based on the target response; and

an accumulator configured to accumulate the square of each error value, wherein the accumulation of the squared error values relates to a parameter of the target response, and the algorithm adjusts its transitions by adaptation of the parameter of the target response.

27. (Previously presented) An apparatus for applying compensation to samples received from an optical channel comprising:

an equalizer having an equalizer response spectrally shaping the samples for compensation to generate a sequence of equalized samples;

an error generator generating an error for a current sample based on the difference between 1) an equalized current sample and 2) a decision for the current sample adjusted for a target response, wherein the target response is based on a response of the optical channel; and

a combiner configured to combine the error with one or more samples to provide an update signal, wherein the equalizer employs the update signal to adjust the equalizer response to the target response;

wherein the equalizer comprises a filter defined by a set of filter taps adapted in accordance with a recursive update rule, wherein the update rule is generated from a cost function.

28. (Previously presented) The invention as recited in claim 27, wherein the cost function is quadratic error and the update rule is generated from minimizing mean squared error of the cost function with respect to the filter tap.

29. (Previously presented) An apparatus for applying compensation to samples received from an optical channel comprising:

an equalizer having an equalizer response spectrally shaping the samples for compensation to generate a sequence of equalized samples;

an error generator generating an error for a current sample based on the difference between 1) an equalized current sample and 2) a decision for the current sample adjusted for a target response, wherein the target response is based on a response of the optical channel; and

a combiner configured to combine the error with one or more samples to provide an update signal, wherein the equalizer employs the update signal to adjust the equalizer response to the target response;

wherein:

the equalizer comprises a filter defined by a set of filter taps; and

the target response is of the form A+D, where A is a parameter ranging from about 0 to about 1, and D is a unit delay.

30. (Previously presented) An apparatus for applying compensation to samples received from an optical channel comprising:

an equalizer having an equalizer response spectrally shaping the samples for compensation to generate a sequence of equalized samples;

an error generator generating an error for a current sample based on the difference between 1) an equalized current sample and 2) a decision for the current sample adjusted for a target response, wherein the target response is based on a response of the optical channel;

a combiner configured to combine the error with one or more samples to provide an update signal, wherein the equalizer employs the update signal to adjust the equalizer response to the target response; and

an accumulator configured to accumulate the square of each error value, wherein the accumulation of the squared error values relates to a parameter of the target response, and the apparatus adapts the parameter of the target response during initialization of the apparatus.

31. (Previously presented) A method of applying compensation to samples received from an optical channel comprising the steps of:

(a) spectrally shaping, with an equalizer, the samples for compensation to generate a sequence of equalized samples;

(b) generating an error for a current sample based on the difference between 1) an equalized current sample and 2) a decision for the current sample adjusted for a target response, wherein the target response is based on a response of the optical channel;

(c) combining the error with one or more samples to provide an update signal;

(d) updating the equalizer with the update signal to adjust the equalizer response to the target response; and

(e) generating decoded data from the sequence of equalized samples with maximum likelihood sequence estimation (MLSE) detection, wherein step (e) generates decoded data with an algorithm having transitions based on the target response;

(f) accumulating the square of each error value, wherein the accumulation of the squared error values relates to a parameter of the target response; and

(g) adjusting the transitions by adaptation of the parameter of the target response.

32. (Previously presented) A method of applying compensation to samples received from an optical channel comprising the steps of:

(a) spectrally shaping, with an equalizer, the samples for compensation to generate a sequence of equalized samples;

wherein step (a) comprises the step (a1) of filtering based on a set of filter taps; and

wherein step (a1) includes the step of adapting the set of filter taps in accordance with a recursive update rule based on a cost function;

(b) generating an error for a current sample based on the difference between 1) an equalized current sample and 2) a decision for the current sample adjusted for a target response, wherein the target response is based on a response of the optical channel;

(c) combining the error with one or more samples to provide an update signal; and

(d) updating the equalizer with the update signal to adjust the equalizer response to the target response.

33. (Previously presented) The invention as recited in claim 32, wherein the cost function is quadratic error and the update rule is generated from minimizing mean squared error of the cost function with respect to the filter tap.

34. (Previously presented) A method of applying compensation to samples received from an optical channel comprising the steps of:

(a) spectrally shaping, with an equalizer, the samples for compensation to generate a sequence of equalized samples;

wherein step (a) comprises the step (a1) of filtering based on a set of filter taps;

(b) generating an error for a current sample based on the difference between 1) an equalized current sample and 2) a decision for the current sample adjusted for a target response, wherein the target response is based on a response of the optical channel;

wherein, for step (b) the target response is of the form A+D, where A is a parameter ranging from about 0 to about 1, and D is a unit delay;

(c) combining the error with one or more samples to provide an update signal; and

(d) updating the equalizer with the update signal to adjust the equalizer response to the target response.

35. (Previously presented) A method of applying compensation to samples received from an optical channel comprising the steps of:

(a) spectrally shaping, with an equalizer, the samples for compensation to generate a sequence of equalized samples;

(b) generating an error for a current sample based on the difference between 1) an equalized current sample and 2) a decision for the current sample adjusted for a target response, wherein the target response is based on a response of the optical channel;

(c) combining the error with one or more samples to provide an update signal;

(d) updating the equalizer with the update signal to adjust the equalizer response to the target response;

(e) accumulating the square of each error value, wherein the accumulation of the squared error values relates to a parameter of the target response; and

(f) adapting the parameter of the target response during initialization of the apparatus.